Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method for controlling an actuator, comprising:

storing a program of instructions on a host computer;

linking the host computer to a smart camera module;

coupling the smart camera module to the actuator;

retrieving the program of instructions from the host computer and loading it into the smart camera module;

obtaining images with the smart camera module; ~~and~~

controlling the actuator with the smart camera module based upon said images and said program; and

checking state information for errors at least twice during a time interval,

wherein said smart camera module maintains an in-page data block containing a set of desired control states from the host computer and an out-page data block containing the current state of all variables maintained with the smart camera module; and

wherein the at least two error checks include a checksum on data integrity of the in-page data block and the out-page data block and a recirculating message sequence number used to verify message order integrity.

2. (Currently Amended) A method in accordance with claim 1 wherein said retrieving is performed immediately after power is applied to the smart camera control module.

3. (Original) A method in accordance with claim 1 wherein said linking is performed with a high speed serial bus implemented over a flexible cable.

4. (Original) A method in accordance with claim 3 wherein said high speed serial bus is an IEEE 1394 bus.

5. (Currently Amended) A method for controlling a first and a second actuator, comprising:

storing a first and a second program of instructions on a host computer;

linking the host computer to a first control module and a smart camera module;

coupling the first control module to the first actuator and the smart camera module to the second actuator;

retrieving the first program of instructions from the host computer and loading it into the first control module;

retrieving the second program of instructions from the host computer and loading it into the smart camera module;

obtaining images with the smart camera module;

processing the images in accordance with the second program of instructions at the ~~second~~ smart camera ~~module'~~ module;

controlling the first actuator with the first control module; and

controlling the second actuator with the smart camera module based upon said images and said second program;

checking state information for errors at least twice during a time interval,

wherein said smart camera module maintains an in-page data block containing a set of desired control states from the host computer and an out-page data block containing the current state of all variables maintained with the smart camera module; and

wherein the at least two error checks include a checksum on data integrity of the in-page data block and the out-page data block and a recirculating message sequence number used to verify message order integrity.

6. (Original) A method in accordance with claim 5 wherein said retrieving the first program is performed immediately after power is applied to the first control module.

7. (Original) A method in accordance with claim 6 wherein said retrieving the second program is performed immediately after power is applied to the smart camera module.

8. (Original) A method in accordance with claim 5 wherein said linking is performed with a high speed serial bus implemented over a flexible cable.

9. (Original) A method in accordance with claim 8 wherein said high-speed serial bus is an IEEE 1394 bus.

10. (Currently Amended) A method for distributed machine control, comprising:

storing a first and a second program of instructions on a host computer;

linking the host computer to a first control module;

linking the first control module to a smart camera module;

coupling the first control module to a first actuator and the smart camera module to a second actuator;

retrieving the first program of instructions from the host computer and loading it into the first control module;

retrieving the second program of instructions from the host computer and loading it into the smart camera module;

obtaining images with the smart camera module;

controlling the first actuator with the first control module; ~~and~~

controlling the second actuator with the smart camera module based upon said images and said second program; and

checking state information for errors at least twice during a time interval,

wherein said smart camera module maintains an in-page data block containing a set of desired control states from the host computer and an out-page data block containing the current state of all variables maintained with the smart camera module; and

wherein the at least two error checks include a checksum on data integrity of the in-page data block and the out-page data block and a recirculating message sequence number used to verify message order integrity.

11. (Original) A method in accordance with claim 10 wherein said linking the host computer is performed with a high speed serial bus implemented over a flexible cable.

12. (Original) A method in accordance with claim 11 wherein said first control module includes a hub supporting the connection of at least one additional device coupled to the hub with a high speed serial bus implemented over a flexible cable.

13. (Original) A method in accordance with clam 12 wherein said linking the first control module computer is performed with a high speed serial bus implemented over a flexible cable.

14. (Original) A method in accordance with claim 13 wherein said retrieving the first program is performed immediately after power is applied to the first control module.

15. (Original) A method in accordance with claim 14 wherein said retrieving the second program is performed immediately after power is applied to the smart camera module.

16. (Original) A method in accordance with claim 10 wherein said retrieving the first program of instructions is accomplished in response to first transmitting from the first control module a unique identification permanently stored in a component of the first control module.

17. (Original) A method in accordance with claim 16 wherein said retrieving the second program of instructions is accomplished in response to first transmitting from the

second control module a unique identification permanently stored in a component of the smart camera module.

18-21. (Canceled)

22. (Currently Amended) An apparatus for controlling an actuator, comprising:

a host computer;

means for storing a program of instructions on the host computer;

means for linking the host computer to a smart camera module, the smart camera module including means for acquiring image data;

means for coupling the smart camera module to the actuator;

means for retrieving the program of instructions from the host computer and loading it into the smart camera module, the program of instructions including instructions for processing the image data; ~~and~~

means for controlling the actuator with the smart camera module; and

means for checking state information for errors at least twice during a time interval,

wherein said smart camera module maintains an in-page data block containing a set of desired control states from the host computer and an out-page data block containing the current state of all variables maintained with the smart camera module; and

wherein the at least two error checks include a checksum on data integrity of the in-page data block and the out-page data block and a recirculating message sequence number used to verify message order integrity.

23. (Original) An apparatus in accordance with claim 22 wherein said means for retrieving operates immediately after power is applied to the smart camera module.

24. (Original) An apparatus in accordance with claim 22 wherein said means for linking includes a high-speed serial bus implemented over a flexible cable.

25. (Original) An apparatus in accordance with claim 24 wherein said high-speed serial bus is an IEEE 1394 bus.

26. (Currently Amended) An apparatus for controlling a first and a second actuator, comprising:

a host computer;

means for storing a first and a second program of instructions on the host computer;

means for linking the host computer to a first control module and a smart camera module, the smart camera module including means for acquiring image data;

means for coupling the first control module to the first actuator and the smart camera module to the second actuator;

means for retrieving the first program of instructions from the host computer and loading it into the first control module;

means for retrieving the second program of instructions from the host computer and loading it into the smart camera module, the second program including instructions for processing the image data;

means for controlling the first actuator with the first control module; ~~and~~

means for controlling the second actuator with the smart camera module; and

means for checking state information for errors at least twice during a time interval,

wherein said smart camera module maintains an in-page data block containing a set of desired control states from the host computer and an out-page data block containing the current state of all variables maintained with the smart camera module; and

wherein the at least two error checks include a checksum on data integrity of the in-page data block and the out-page data block and a recirculating message sequence number used to verify message order integrity.

27. (Original) An apparatus in accordance with claim 26 wherein said means for retrieving the first program operates immediately after power is applied to the first control module.

28. (Original) An apparatus in accordance with claim 27 wherein said means for retrieving the second program operates immediately after power is applied to the smart camera module.

29. (Original) An apparatus in accordance with claim 26 wherein said means for linking includes a high-speed serial bus implemented over a flexible cable.

30. (Original) An apparatus in accordance with claim 29 wherein said high-speed serial bus is an IEEE 1394 bus.

31. (Currently Amended) An apparatus for distributed machine control, comprising:

a host computer;

means for storing a first and a second program of instructions on the host computer;

means for linking the host computer to a first control module;

means for linking the first control module to a smart camera module, the smart camera module including means for acquiring image data;

means for coupling the first control module to a first actuator and the smart camera module to a second actuator;

means for retrieving the first program of instructions from the host computer and loading it into the first control module;

means for retrieving the second program of instructions from the host computer and loading it into the smart camera module, the second program including instructions for processing the image data;

means for controlling the first actuator with the first control module; ~~and~~

means for controlling the second actuator with the smart camera module; and

means for checking state information for errors at least twice during a time interval,

wherein said smart camera module maintains an in-page data block containing a set of desired control states from the host computer and an out-page data block containing the current state of all variables maintained with the smart camera module; and

wherein the at least two error checks include a checksum on data integrity of the in-page data block and the out-page data block and a recirculating message sequence number used to verify message order integrity.

32. (Original) An apparatus in accordance with claim 31 wherein said means for linking the host computer includes a high-speed serial bus implemented over a flexible cable.

33. (Original) An apparatus in accordance with claim 32 wherein said first control module includes a hub supporting the connection of at least one additional device coupled to the hub with a high speed serial bus implemented over a flexible cable.

34. (Original) An apparatus in accordance with clam 33 wherein said means for linking the first control module computer includes a high-speed serial bus implemented over a flexible cable.

35. (Original) An apparatus in accordance with claim 34 wherein said means for retrieving the first program operates immediately after power is applied to the first control module.

36. (Original) An apparatus in accordance with claim 35 wherein said means for retrieving the second program operates immediately after power is applied to the smart camera module.

37. (Original) An apparatus in accordance with claim 31 wherein said means for retrieving the first program of instructions is responsive to first transmitting from the first control module a unique identification permanently stored in a component of the first control module.

38. (Original) An apparatus in accordance with claim 37 wherein said means for retrieving the second program of instructions is responsive to first transmitting from the smart camera module a unique identification permanently stored in a component of the smart camera module.

39-41. (Canceled)

42. (Currently Amended) A method in accordance with ~~claim 41~~ claim 47 wherein said sending is performed using the IEEE 1394 bus isochronous protocol mode.

43. (Currently Amended) A method in accordance with ~~claim 41~~ claim 47 wherein said sending is performed in response to a real-time clock causing ~~the~~ an issuance of a read request to said smart camera module at fixed time intervals.

44. (Currently Amended) A method in accordance with ~~claim 41~~ claim 47 wherein said sending and said storing do not require permission from, redirection from or routing by said host computer.

45-46. (Canceled)

47. (Currently Amended) A method for controlling an actuator, comprising:

storing a program of instructions on a host computer;

linking the host computer to a smart camera module;

coupling the smart camera module to the actuator;

retrieving the program of instructions from the host computer and loading it into the smart camera module;

acquiring image data with the smart camera module;

processing the image data with the smart camera module;

controlling the actuator with the smart camera module;

sending state information reflecting a state of the smart camera module from the smart camera module to the host computer repeatedly at fixed time intervals;

storing the state information in memory of the host computer between said fixed time intervals; and

checking the state information for errors at least twice during each said time interval,

wherein said smart camera module maintains an in-page data block containing a set of desired control states from the host computer and an out-page data block containing the current state of all variables maintained with the smart camera module; and

~~A method in accordance with claim 46~~ wherein the at least two error checks include a checksum on data integrity of the in-page data block and the out-page data block and a recirculating message sequence number used to verify message order integrity.

48. (Original) A method in accordance with claim 47, wherein said checksum and said recirculating message sequence number are data fields appended to the in-page data block and the out-page data block.

49. (Canceled)

50. (Currently Amended) An apparatus in accordance with ~~claim 49~~ claim 55 wherein said means for sending utilizes the IEEE 1394 bus isochronous protocol mode.

51. (Currently Amended) An apparatus in accordance with ~~claim 49~~ claim 55 wherein said means for sending is responsive to a real-time clock causing ~~the~~ an issuance of a read request to said smart camera module at fixed time intervals.

52. (Currently Amended) An apparatus in accordance with ~~claim 49~~ claim 55 wherein said means for sending and said means for storing do not require permission from, redirection from or routing by said host computer.

53-54. (Canceled)

55. (Currently Amended) An apparatus for controlling an actuator, comprising:

a host computer;

means for storing a program of instructions on the host computer;

a smart camera including an image sensor for acquiring image data;

means for linking the host computer to said smart camera module;

means for coupling said smart camera module to the actuator;

means for retrieving the program of instructions from the host computer and loading it into said smart camera module, the program including instructions for processing the image data;

means for controlling the actuator with said smart camera module;

means for sending state information reflecting a state of said smart camera module from said smart camera module to the host computer repeatedly at fixed time intervals;

means for storing the state information in memory of the host computer between said fixed time intervals; and

means for checking the state information for errors at least twice during each said time interval,

wherein said smart camera module maintains an in-page data block containing a set of desired control states from the host computer and an out-page data block containing the current state of all variables maintained with the smart camera module; and

~~An apparatus in accordance with claim 54~~ wherein the at least two error checks include a checksum on data integrity of the in-page data block and the out-page data block and a recirculating message sequence number used to verify message order integrity.

56. (Original) An apparatus in accordance with claim 55, wherein said checksum and said recirculating message sequence number are data fields appended to the in-page data block and the out-page data block.

57-60. (Canceled)

61. (Original) A method in accordance with claim 5 wherein said linking includes providing a first connection between the host computer and a hub disposed in the first control module and providing a second connection between the hub disposed in the first control module and a smart camera module.

62-69. (Canceled)